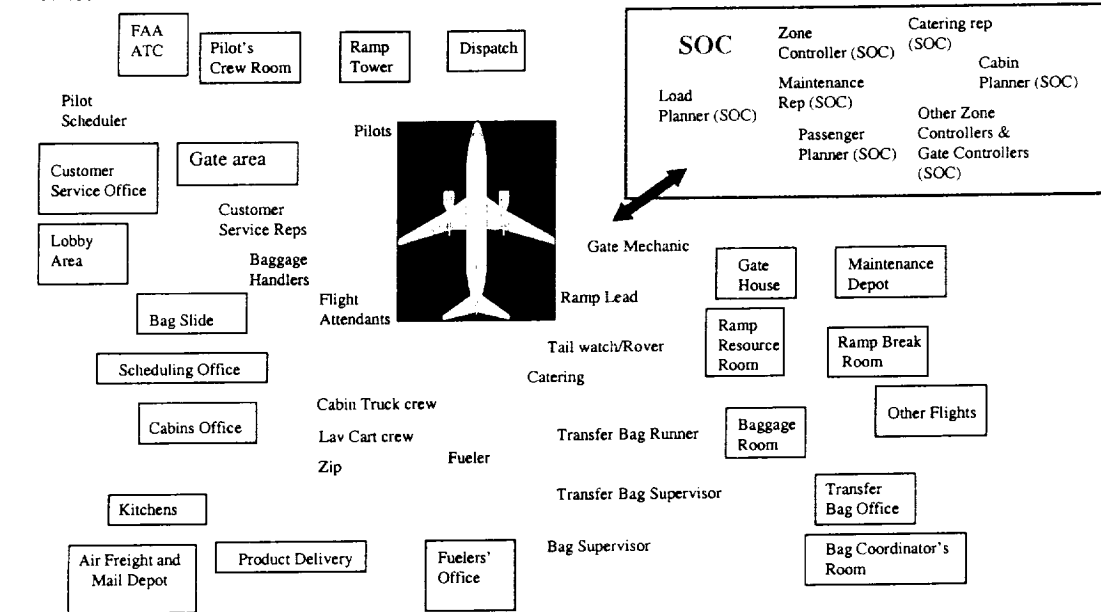




The Airplane Production System: Turning an Airplane



Ames Research Center



11/23/2002

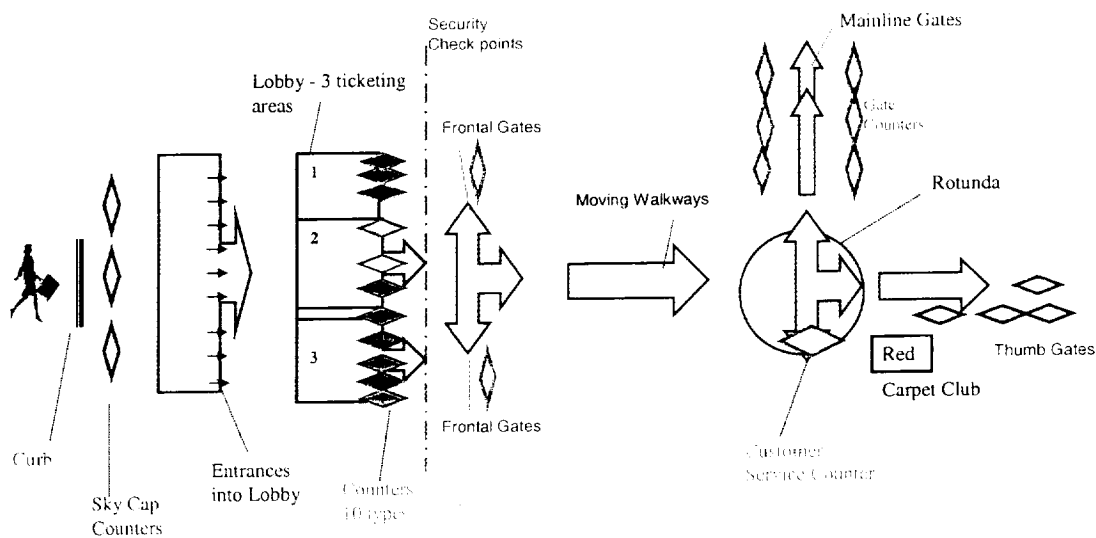
5



Airport Terminal Production System: Moving the Passenger



Ames Research Center



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What We Found (2)



- Airline worldview:
 - Airlines focus on the best way to move planes rather than the best way to move people
 - Airlines plan for the “routine travel event”, based on the assumption that travel disruptions are the exception rather than the rule
- Needed expansion of airline worldview:
 - Information systems and procedures for routinely handling disrupted travel
 - Understand the “**customer-as-participant**”
 - Realize that the airline customer is an intelligent actor, moving through the airline system, negotiating and interacting with it
 - Prepare for Customers’ actions to affect and change the airline system

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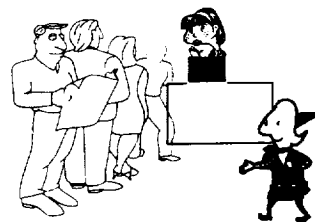
Focusing on People not Planes- Finding the Customer



- Method: Following customer trajectories from the curb to the plane
- Method: “Jumping the Counter” - seeing one transaction from two perspectives



From the Customer Service Rep's perspective



From the Customer's Perspective

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What We Found (3)

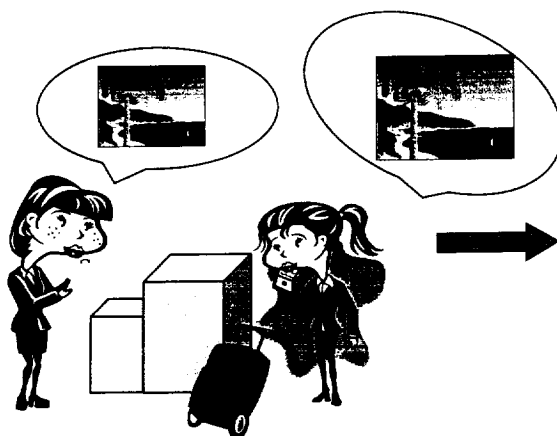


- Airline information systems
 - Fail to support customer service representatives (CSRs) and customers in complex negotiations during disrupted travel
 - Rely heavily on human rather than electronic memory to help align and re-establish a shared travel context
 - Shared travel context is re-established through “*negotiated interactions*”
- “**Negotiated interactions**”: what is happening when that annoying customer in front of you is at the counter for fifteen minutes
- Negotiated interactions as a
 - Red flag to researchers indicating a breach of routine
 - Attempt by CSRs and customers to realign customer needs and airline system capacity

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Simple Routine Transaction (SRT)



Simple Routine Transaction

completed:

- CSR and customer exchanged information and documents.
- All systems software components (seating, bags, passenger planning, routing, etc.) updated to reflect transaction.
- Customer moves on to receive other services. CSR helps next customers.

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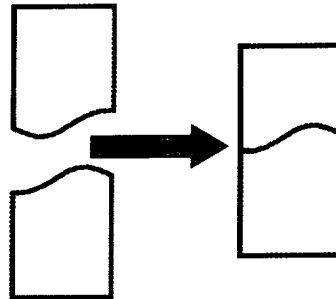
10

Simple Routine Transaction (SRT)



CSR receives
Customer
information and
inputs into system

Customer
gives
information
to CSR



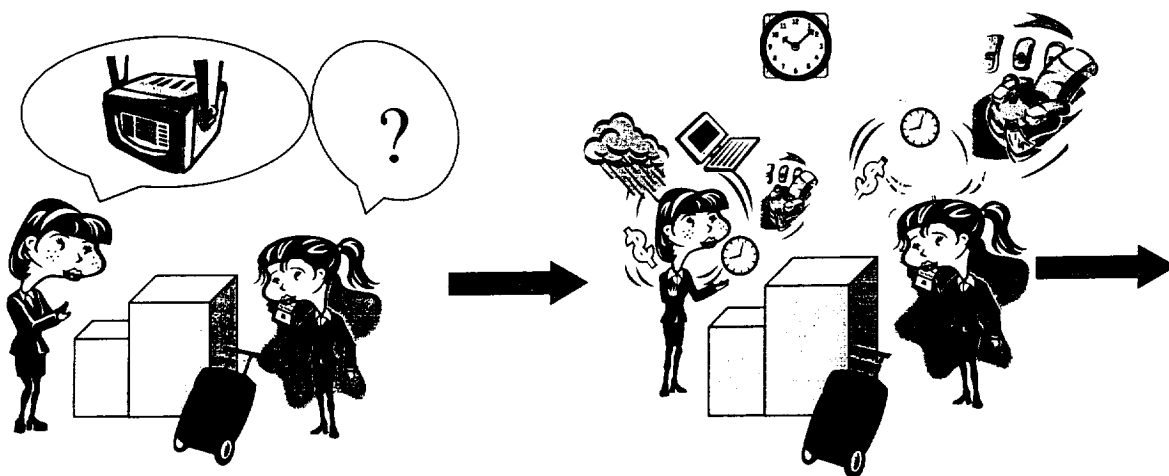
Simple Routine Transaction
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- CSR and customer exchange information and documents.
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Supported Negotiated Interaction (SNI)



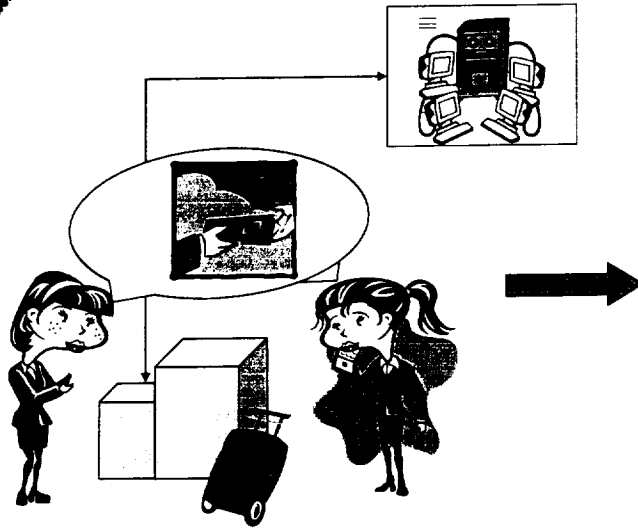
Travel is disrupted

Negotiating to re-establish a
shared context

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Supported Negotiated Interaction (SNI)



Shared context established
All system components
updated in software system

Supported Negotiated Interaction complete:

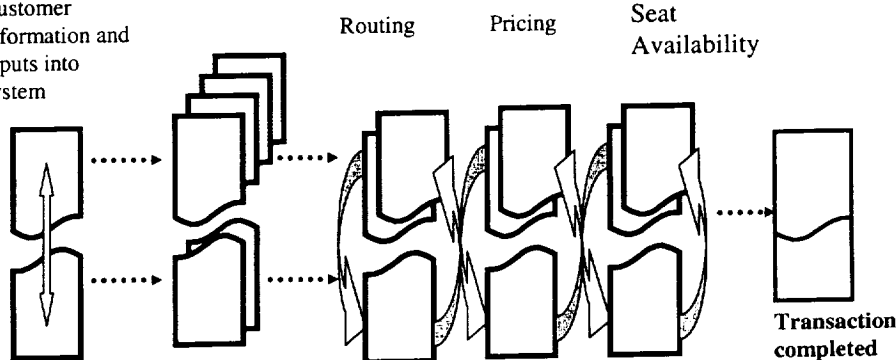
- Pertinent information is available in the software but not automatically displayed and linked to complete the changed transaction.
- CSR must remember and deal with multiple choices during the transaction.
- After an SNI is complete, system resources and memory are updated automatically

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Supported Negotiated Interaction (SNI)

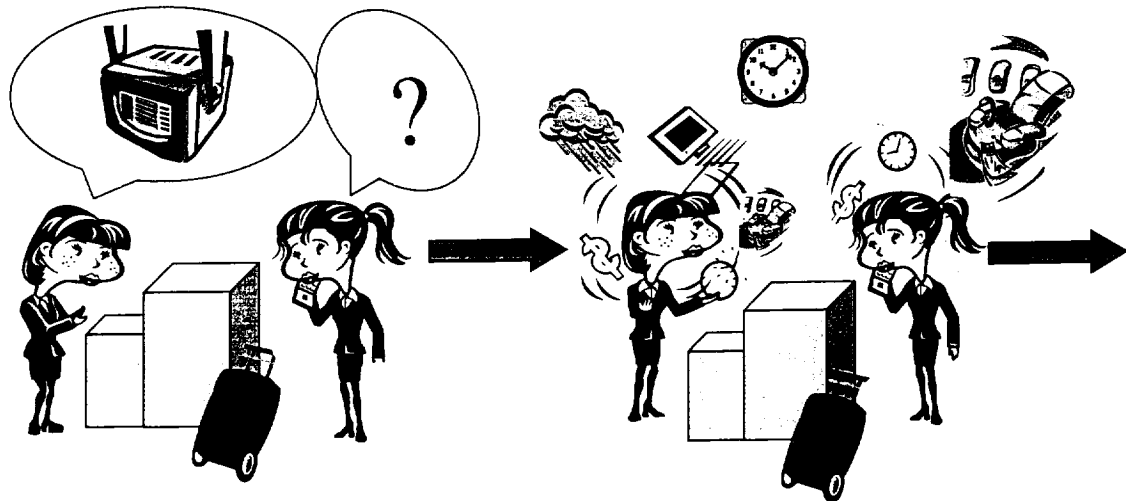


CSR receives
Customer
information and
inputs into
system



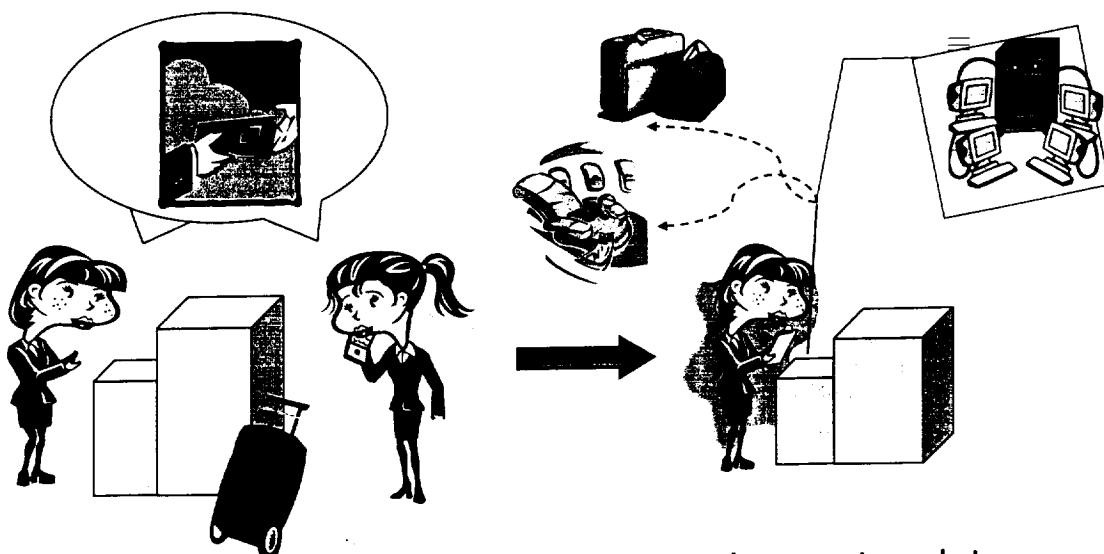
Customer
gives
information
to CSR

Changes in routine travel
require a resolution between
several components that
must be negotiated
individually to complete the
transaction.



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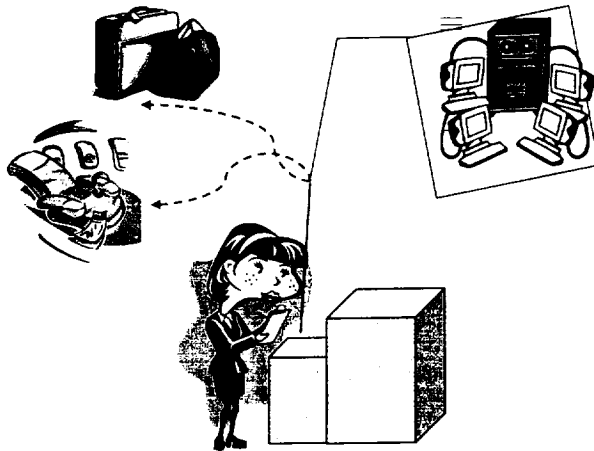
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Shared context is
Apparently re-established

System does not update - 16 components remain unresolved

Unsupported Negotiated Interaction (UNI)



Information system fails to support the interaction

Unsupported Negotiated Interaction complete

- Components remain unresolved because of failures of the information system to prompt for action, support memory or allow for input
- Unresolved components will affect allocation of downstream system resources and may cause breakdowns

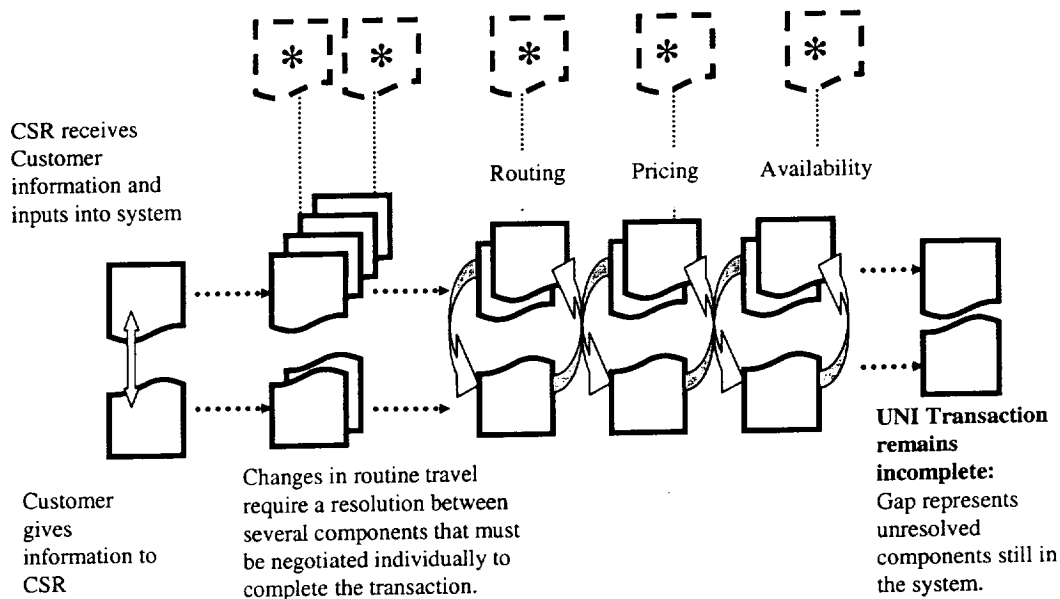
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Unsupported Negotiated Interaction



Components remain unresolved in the system (*).



What We Learned



- CSRs and customers are left to manage the gaps in electronic memory with social compensation
- The information system, which has multiple layers and multiple programs, only partially supports the work practice of the CSR as s/he interacts with the customer during complex negotiated interactions
 - The information system does not necessarily provide an accurate update of all airline system components
 - CSR and customer must maintain in human memory many of the components relevant to ticket changes

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This Stuff is Everywhere – Go Out and Look For It



- The “customer as participant”
 - An organization’s customers are intelligent actors who can affect and change the organizational system
 - Employees using software information systems often interact with those customers in a dynamic of change
 - What is the effect on the organization?
- Negotiated Interactions
 - Flags for identifying places where problems and deficiencies are being revealed
 - Useful for improving design
- Ethnographies of work consistently show the hidden intelligence in supposedly routine work
 - People are not just “key pushers”
 - It’s our job to reveal hidden intelligent work and its design implications to owners and developers of information systems

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Published Article on this Material



- Wales, R., O'Neill, J., Mirmalek, Z. (2002) Ethnography, customers, and negotiated interactions at the airport. IEEE Intelligent Systems, September/October, 15-23.